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TESTING AMARANT CROP RESISTANCE TO WATER DEFICIT CONDITIONS DURING DRIP IRRIGATION.

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Annotation.
In order to check the resistance of agricultural crops to the conditions of water shortage during the irrigation period, the article was published in 2021 from the "water-saving technologies" of the scientific training center of the "Tashkent Institute of Irrigation and Agricultural Mechanization Engineers" National Research University located in the Ortachirchik district of the Tashkent region. prepared based on the results of the scientific research carried out at the landfill. In the article, determining the soil moisture in the research area, the information of the area for planting amaranth plant is studied. The amaranth plant was irrigated using modern irrigation technologies and the period of irrigation of the plant as a result of drip irrigation was studied. Phenological observations were made and the results were analyzed. The resistance of amaranth crop to water deficit conditions during drip irrigation was checked.

Key words.
soil moisture, Amaranth, phenological observations, efficiency, water consumption, vegetation period,

Introduction.

Nowadays, great importance is attached to irrigation technologies in the use of agricultural lands. There are many examples of reforms being carried out in this regard.

In the republic, in 2020-2030, it is necessary to provide the population and all sectors of the economy with water, to improve the reclamation of irrigated lands, to widely introduce market principles and mechanisms and digital technologies to water management, to ensure the reliable operation of water management facilities. The development of the concept aimed at increasing the efficiency of the use of

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land and water resources is the result of reforms in the field of water management. In foreign countries, great importance is attached to the improvement of irrigation technology [1].

Many countries in the world have their own historical traditions, needs for water resources, economic development, and history of irrigation in each reclamation and water management, and they differ from each other. The directions of water use are defined in them mainly depending on the state's level of development [1-3].

In support of the large-scale work carried out in order to save and rationally use water resources in the cultivation of agricultural crops in our republic, "Tashkent Institute of Irrigation and Agricultural Mechanization Engineers" National Research University Scientific Training Center This scientific research work was carried out at the "use of water-saving technologies" landfill. "Use of water-saving technologies" landfill of the scientific training center of the national research university "Tashkent Institute of Irrigation and Agricultural Mechanization Engineers". It is located in the Orta Chirchik district of the Tashkent region and was implemented within the framework of the European Union's "Sustainable management of water resources in rural areas of Uzbekistan" program. It was built by the joint project of the UN Development Program and the Ministry of Water Management of the Republic of Uzbekistan "Strengthening the technical potential" [2].

Materials and methods. Tis study assessed the physiological behavior of three feld-grown species in response to water defcits in three irrigation treatments, by assessing certain physiological parameters. Te results revealed three contrasting physiological behaviors. First, C. siliqua, an evergreen indigenous species adapted to the Mediterranean climate, tolerates a water defcit by decreasing its leaf water potential and probably enhancing its root system depth. Second, E. camaldulensis, an evergreen species planted in Morocco, showed an isohydric behavior that resulted in stomatal closure under water defcit conditions. Finally, M. oleifera is an exotic deciduous species that responds to water defcits by losing its leaves. Te physiological regulatory pathways help the plant to cope with water defcit stress, and hence allow species choice for adaptative environments. Tus, further investigations on the transcriptomic and metabolomic mechanisms involved in these species' adaptation to drought are recommended [4]. Today, monitoring of plants is carried out using modern technologies. ArGIS, ENVI, and other satellite image programs can be used to remotely identify and monitor plant growth [5].

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During this study, 20 drip hoses of 50 m length were laid at a depth of 30 cm at an interval of 1.2 m in the experimental field. Amaranth seeds were sown 15 cm away from both sides of the line where the drip hoses were located. A total of 1.8 kg of amaranth seeds were dripped from 1.2 ha of soil into the irrigation field for the experiment. A total of MTZ 80 tractors spent 3 hours, and a total of 4 people worked for 80 hours during agrotechnical activities. The vegetation period lasted 145 days, and during this period soil moisture, seepage water level and irrigation water volume were regularly controlled. Mineral and organic fertilizers were not used during the vegetation period.

Natijlar va ularning muhokamasi. During the vegetation period, soil moisture was regularly sampled and monitored. Irrigation works were organized based on the results of humidity. A soil layer with a moisture content of up to 225 cm depth was sampled three times from one place. Soil moisture was taken 15 times during the general vegetation period.

Results from the first point

Table 1

04.08.2022 Samples taken to determine soil moisture. 1				
№	**Buyuksa number**	**Great weight**	**Wet soil weight**	**dried soil weight**
1	.007	22.83	47,27	46,68
2	106	22,15	48,03	47,16
3	.002	22,21	48,51	47,27
4	.039	22,55	45,76	44,65
5	196	21,96	48,88	47,17

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6	114	21,8	47,61	45,99
7	101	22,59	51,73	50,05
8	.081	22,44	49,02	47,49
9	.080	21,83	49,64	48,05
Total		177,53	389,18	377,83

Results from the second point

Table 2

Samples taken to determine soil moisture. 2				
№	**Buyuksa number**	**Great weight**	**Wet soil weight**	**dried soil weight**
1	345	22,89	47,1	46,73
2	.004	22,19	46,99	45,47
3	.044	22,22	46,56	44,56
4	.015	22,92	48,14	46,36
5	.085	21,45	43,08	41,75
6	.099	21,58	48,62	46,47
7	163	22,8	46,49	44,62
8	193	20,42	45,18	43,2
9	279	21,99	47,48	45,44
Total		175,57	372,54	357,87

Uchinchi nuqtadan olingan natijalar

Table 3

Samples taken to determine soil moisture. 3				
№	**Buyuksa ber**	**Great weight**	**Wet soil weight**	**dried soil weight**
1	61	21,71	40,29	39,38
2	7	24,52	51,25	49,92
3	302	22,94	48,23	46,85
4	10	20,9	47,2	45,83
5	214	23,58	44,95	44
6	1	22	46,46	44,94
7	67	22,09	45,84	44,57
8	161	22,14	48,31	47,06
9	42	21,58	46,12	45,05
Total		179,75	378,36	368,22

Together with humidity measurement, water consumption consumption during drip irrigation of sorghum and amaranth crops was also measured. In the

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process of measuring water consumption, water consumption coming out of drip irrigation hoses from 8-10 points of the crop area is measured and averaged. A number of problems were encountered during the growth of the plant, one of which is the disease of the plant. Nurelle-D capsules were immediately sprayed on the amaranth plant against the disease.

The phenology of the amaranth plant, i.e. the height of the plant, the number of leaves, the length of the crop, and its weight, during the germination process, were studied. Leaves of 40% of the total length of the amaranth plant, i.e. 55 cm long from the ground, were taken. The weight of the obtained leaves was measured, the measured time was recorded and they were spread on the ground for drying.

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Summary

Planting of amaranth plant, observation of its development, irrigation and phenological results showed that amaranth is quite resistant to drought. It is possible to irrigate this crop using several water-saving technologies, but it is appropriate to use drip irrigation technology as the most optimal. Special attention should be paid to agrotechnical measures during planting. The phenological observations from planting to germination and ripening will make the results of the experiment more accurate. The moisture in the soil is constantly monitored, the soil moisture before and after watering is taken on the basis of samples, and we keep the data until the end of the field work. Compared to other crops, the amaranth plant quickly adapted to our field and it was found out based on the results of the research that it is resistant to water.

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